

## CLAIMS:

1. A mercury-free gas discharge lamp having an inner vessel and an outer bulb, characterized in that the inner vessel and/or the outer bulb comprises a structured arrangement.
- 5 2. A mercury-free gas discharge lamp as claimed in claim 1, characterized in that the structured arrangement is made such that the diffuseness of the discharge arc of the mercury-free gas discharge lamp with structured arrangement increases by dD 0.01 mm up to 1.5 mm in comparison with the corresponding gas discharge lamp without structured arrangement.
- 10 3. A mercury-free gas discharge lamp as claimed in claim 1 or 2, characterized in that the structured arrangement is made such that the discharge arc curvature of the mercury-free gas discharge lamp with a structured arrangement is reduced by dK 0.01 mm up to dK 0.5 mm in comparison with the corresponding gas discharge lamp without structured arrangement.
- 15 4. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 3, characterized in that the mercury-free gas discharge lamp is a mercury-free high-pressure gas discharge lamp, preferably a mercury-free xenon high-pressure gas discharge lamp.
- 20 5. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 4, characterized in that the light losses of the mercury-free gas discharge lamp with structured arrangement as compared with the gas discharge lamp without structured arrangement amount to  $\leq 90$  lumens and  $\geq 5$  lumens, preferably  $\leq 60$  lumens and  $\geq 10$  lumens, and more
- 25 preferably  $\leq 50$  lumens and  $\geq 30$  lumens.
6. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 5, characterized in that the inner vessel and/or outer bulb is made of a material chosen from the

group comprising glass and/or ceramic materials, the inner vessel and outer bulb being preferably made of glass.

7. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 6,  
5 characterized in that the inner vessel and/or outer bulb has a structured arrangement on its outer surface facing away from the discharge arc, on its outer surface facing the discharge arc, and/or within the vessel or bulb material itself.
8. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 7,  
10 characterized in that the inner vessel and/or outer bulb comprises a homogeneous and/or inhomogeneous structured arrangement, which structured arrangement is preferably formed by laser treatment, sandblasting, surface etching, surface slitting and/or roughening, and is possibly finished by fire polishing.
- 15 9. A mercury-free gas discharge lamp as claimed in any one of the claims 1 to 8, characterized in that the structured arrangement covers a surface area of  $2 \text{ mm}^2$  to  $12 \text{ mm}^2$ , said surface being preferably arranged over the brightest spot in the discharge arc.
10. The use of the mercury-free gas discharge lamp as claimed in any one of the  
20 claims 1 to 9 for illumination purposes, in particular in motor vehicles.